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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,913	08/29/2003	Koji Furukawa	2185-0705P	7986
2292	7590	11/16/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			PAK, JOHN D	
			ART UNIT	PAPER NUMBER
			1616	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/650,913	<b>Applicant(s)</b> FURUKAWA ET AL.	
	<b>Examiner</b> JOHN PAK	<b>Art Unit</b> 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/1/03</u> . | 6) <input type="checkbox"/> Other: ____  |

Art Unit: 1616

Claims 1-7 are pending in this application.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4-5 specify the thermoplastic polyester base resin and low molecular weight polyester resin in terms of their softening point. Hence, the softening point defines the metes and bounds of resins that fall within the claimed invention in claim 4. However, a softening point depends on the method used to determine it, and applicant's specification fails to define the method used for determining the softening point. See for example Zeus<sup>®</sup> Technical Whitepaper, paragraph bridging pages 1 and 2. Claims 4-5 are therefore unclear and indefinite.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-64491 in view of Sasaki et al. (US 2005/0065231), JPAP abstract JP408020680A and the acknowledged prior art.

JP 2001-64491 discloses dispersing a pigment or dyestuff in a thermoplastic polyester resin by using as a vehicle for the pigment/dyestuff a low molecular weight polyester resin of a number average molecular weight of 1,800-16,000 in a ratio of 25-150 wt% based on the weight of the pigment or dyestuff. See translation of claim 1 and paragraph 0006 (translation provided by applicant). Master batch type resin composition is disclosed (translation of paragraphs 0005 and 0010). Dilution of the master batch with the thermoplastic polyester resin is disclosed (translation of paragraphs 0010, 0019). Inorganic pigment is disclosed, e.g. zinc powder (translation of paragraph 0011). A copper based pigment is also disclosed (Example 1). Improved compatibility with polyester resins is obtained by using a low molecular weight polyester resin as the vehicle (translation of paragraph 0012). Melting point of the low molecular weight polyester resin is preferably 50-120 °C (translation of paragraph 0015). Amount of the thermoplastic base resin used to dilute is 9900% by weight or less (e.g. 900 wt% or less) of the master batch or 24750% by weight or less (e.g. 2250 wt% or less) of the dyestuff/pigment (translation of paragraph 0020).

Sasaki et al. disclose preparing an inorganic antibacterial agent, which is premixed with thermoplastic resin and mixing the agent with a base resin to manage the

dispersibility of inorganic antibacterial agent (paragraph 0010). Inorganic antibacterial agent particles having a size of 2 microns or more must not exceed 1% (paragraph 0069). 0.05-0.5 micron size is preferred (paragraph 0076). Silver, copper and zinc are disclosed as suitable antibacterial metals (paragraph 0078). Thermoplastic polyester resins are disclosed (paragraphs 0087-0088; claim 8).

JPAP abstract JP408020680A discloses dispersing an additive such as a pigment or an antimicrobial agent by using a mixture of low molecular polyethylene and higher molecular weight polyethylene to disperse in a resin composition of thermoplastic polyester and a copolymer of maleic anhydride and styrene.

Applicant acknowledges in the present specification that it is known in the art to disperse a particulate inorganic antibacterial agent in a resin and to dilute the master batch in which the antibacterial agent has been previously dispersed by kneading as means for dispersing the particulate inorganic antibacterial agent in the resin. See specification page 1, lines 15-22.

The difference between the claimed invention and JP 2001-64491 is that JP 2001-64491 does not explicitly disclose dispersing an inorganic antibacterial agent. JP 2001-64491 is concerned with dispersing dyestuff/pigment, not an inorganic antibacterial agent.

However, the prior art is well developed in recognizing the need to incorporate an antibacterial agent to the polyester resin, as discussed above. Sasaki et al. teach the

concept of premixing an inorganic antibacterial agent such as silver, copper or zinc with a thermoplastic resin, whereas JPAP abstract JP408020680A teaches the interchangeability of dispersing a pigment or an antimicrobial agent by premixing with a vehicle that contains a low molecular polymer. From such state of the art and level of the skill of the ordinary skilled artisan, there would have been sufficient motivation to utilize the pigment dispersing technique taught in JP 2001-64491 to further disperse an inorganic antibacterial agent. Interchangeability of dispersing a pigment or antibacterial agent is taught by JPAP abstract JP408020680A, and dispersing of zinc powder and copper based substance is already explicitly taught in JP 2001-64491. Therefore, due to the advantages of improved compatibility taught in JP 2001-64491, one having ordinary skill in the art would have been sufficiently motivated to further disperse inorganic antimicrobial agents by using as a vehicle a low molecular weight polyester resin of a number average molecular weight as low as 1,800 at a ratio including 25 wt% based on the weight of the pigment or dyestuff. The softening point feature of higher than 70 °C for the base resin would have been obvious since such higher softening point is desirable for end use of the thermoplastic, and softening point of 40-70 °C would have been obvious since melting point of the low molecular weight polyester resin in JP 2001-64491 includes 50 °C.

Therefore, the claimed invention, as a whole, would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, because

every element of the invention and the claimed invention as a whole have been fairly disclosed or suggested by the teachings of the cited references.


Any inquiry concerning this communication or earlier communications from the Examiner should be directed to JOHN PAK whose telephone number is **(571)272-0620**. The Examiner can normally be reached on Monday to Friday from 8 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's SPE, Gary Kunz, can be reached on **(571)272-0887**.

The fax phone number for the organization where this application or proceeding is assigned is **(571)273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JOHN PAK  
PRIMARY EXAMINER  
GROUP 1600